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The New Zealand Forms of *Prasophyllum* R. Br.

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Introduction.

Prasophyllum is one of the most difficult of orchid genera to classify. The superficial similarity of many of the species, and the minute flowers of others, combined with a tendency on the part of the floral segments to change their shape during development and while drying, render it almost impossible to work with dried specimens. Nevertheless a great many species were based upon such material, and the genus quickly reached a state of confusion. To overcome these difficulties, fresh descriptions from living material were necessary, and the Australian forms have been admirably elucidated during recent years by Rupp and Nicholls. The aim of this paper is to bring the New Zealand species into line with their work. The descriptions which follow (with the exception of *Pr. rogersii*) have been drawn up from living material collected by the writer and carefully checked against the original and any subsequent descriptions. The numbers (in italics) used in citing the New Zealand distribution refer to Cockayne's Botanical Districts.

Development: Juvenile tubers bear leaves only. The tubers of the second, third, and fourth seasons bear small, few-flowered spikes, with usually long, over-topping leaf-laminae. The characteristic dense spikes are not produced as a rule, until after the fifth season. The tubers are very large in proportion to the rest of the plant.

Fertilisation has been described by Dr. R. S. Rogers. The plants are adapted for insect-pollination, but should this method fail, are capable of self-fertilisation. Some of the smaller species are often cleistogamous, so that the anther connective must rise, whether the flower opens or not.

The anther lies behind the stigma, with the rostellum immediately above them both. The two pollinia are attached to the modified portion of the rostellum by a linear caudicle, which is covered, in the bud, by the anther connective. When the flower opens the connective rises, exposing the upper side of the caudicle to the drying action of the air, which causes it to shrink and curl. The pollinia are rotated by this shrinking of the caudicle, and carried over to the front of the column, where they are deposited, more or less accurately, on to the viscid surface of the stigma. At any time during this recurving process the pollinia may be removed by insects.

PRASOPHYLLUM R. Br.

Terrestial, glabrous herbs with ovoid or globose tubers. Leaf tubular, solitary or very rarely two leaves, closely sheathing the stem for most of its length, the terete lamina variously produced. Flowers reversed, few or many in a terminal raceme. Floral bracts, rudimentary, minute, closely appressed to the base of the ovary. Dorsal sepal more or less cucullate. Lateral free or united, the lobes usually spreading. Petals shorter and narrower than the sepals. Labellum sessile or attached by a claw, suberect and recurved, the margins entire or variously crenulate, undulate or ciliate. Upper surface with a large callus. Column short, stigma an irregularly rounded disc. Column-wings narrow, entire, or variously lobed. Anther robust, two-celled. Pollinia bi-lobed, attached to a caudicle. Rostellum terminal, usually prominent, separating the anther from the stigma.

A genus of rather more than 80 species, the majority in Australia, and a few in New Zealand and New Caledonia.

KEY TO THE NEW ZEALAND SPECIES.

1.	Labellum sessile, lamina reddish-green .. .	2.
	Labellum on a very short, rigid claw, lamina broad, white, margins prominently crenulate	*suttonii*
	Labellum on a narrow, movable claw . ..	3.
2.	Margins flat, callus pale, extending only to the curve ..	*rogersii*
	Margins undulate, callus green, extending almost to the tip	*colensoi*
3.	Labellum green, mucronate, margins entire, callus of several inconspicuous ridges	*pumilum*
	Labellum dark-red, acuminate, margins ciliate at the tip, callus with a prominent linear cleft	*nudum*

1. Prasophyllum rogersii.

Rupp, *Proc. Linn. Soc. N.S.W.*, 52, 1928, 340.
Rupp, *Orch. N.S.W.*, 1943, 28.
Rupp & Hatch, *Proc. Linn. Soc. N.S.W.*, 70, 1946, 58.

Slender, up to 45 cm. high. Leaf sheathing the stem for a third of its length, the long lamina seldom exceeding the inflorescence. Flowers up to 20 in a loose, dark-green spike. Dorsal sepal broad, almost straight, with three prominent nerves. Lateral sepals free or united, lanceolate, spreading. Petals shorter and broader than the lateral sepals. Labellum sessile, the upper third recurved, margins entire. Callus ovate-acuminate, very prominent, pale, extending to the curve. Column-wings oblong, shorter than the rostellum, as is the robust anther.

Distribution: Australia—New South Wales, Tasmania, Victoria; rare. New Zealand—*2,* Kaitaia, 11, 1924, H. B. Matthews & H. Carse. 4,000ft. to 5,000ft. in Australia, descending to sea level in New Zealand. Flowers November to January. *Holotype* in Herb. Rupp; Barrington Tops Plateau, N.S.W., 1, 1928. New Zealand specimens in Herb. Rupp and in the Auckland Museum.

The above description has been taken from H. B. Matthews' MS., where the species is referred to as *Pr. " patentifolium ".* It was originally drawn up by Carse and Matthews from the living material, and corresponds with Rupp's description of the Australian form. It has some affinity with *Pr. colensoi* and with the Australian *Pr. alpinum* R. Br.

PLATE 28.

1. *Pr. colensoi*, nat. size. (a) Flower from side. (b) Labellum from side (after Smith). (c) Labellum from above (after Smith). (d) Two-leaved plant from Murimotu.

2. *Pr. suttonii*, nat. size. (e) Flower from side. (f) Labellum from side. (g) Labellum from above. (h) Pollinia of *Pr. striatum* attached to their caudicle (after Scammel).

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PLATE 29.

1. *Pr. pumilum* × 2. (a) Flower from side. (b) Labellum from side. (c) Labellum in section. (d) Labellum from above.
2. *Pr. nudum* × 2. (e) Flower from side. (f) Labellum from above. (g) Labellum in section. (h) Labellum from side.
3. *Pr. rogersii*, nat. size. (j) Flower from side.

4. Prasophyllum pumilum Hook. f.

Fl. Nov. Zel., 1, 1853, 242.

Small, slender, up to 35 cm. high. Leaf sheathing the whole stem, the lamina usually shorter than the inflorescence, but exceeding it in young specimens. Flowers up to 40 in a dense, creamy spike. Dorsal sepal sub-cucullate, the acuminate tip recurved. Lateral sepals free or united, falcate, spreading. Petals broadly mucronate. Labellum green, much recurved, broad linear, mucronate or acute, on a narrow reddish claw. Callus of several inconspicuous raised green ridges. Column-wings narrow-acuminate.

Distribution: Endemic in the North Island, *2, 3a.* Clay banks and roadsides and in mossy open places in low scrub throughout the North Auckland Peninsula. Not common. *3b,* Rangiriri, *T. F. Cheeseman; 3c,* Coromandel, *T. F. Cheeseman; 5,* Rotorua, Rotoehu, Te Puke, *K. W. Allison;* Waitahanui River (Bay of Plenty), 3, 1941, *K. W. Allison.*

Flowers March to June. Sea level to 1,000ft.

5. Prasophyllum nudum Hook. f.

Fl. Nov. Zel., 1, 1853, 242; Hatch. *Trans. R.S.N.Z.*, 75, 1945, 369.
Pr. tunicatum Hook. f. *Fl. Nov. Zel.*, 1, 1853, 242.
Pr. variegatum Col. *Trans. N.Z. Inst.*, 20, 1888, 208.
Pr. rufum Cheesmn. (not of R. Br.)

Smaller than *Pr. pumilum.* Leaf lamina not reaching the inflorescence. Flowers up to 20 in a loose, dark-red spike. Dorsal sepal cucullate, acuminate, inrolled. Lateral sepals united, with a narrow, acute sinus; the lobes subulate, inrolled, parallel or only slightly spreading. Petals narrow-acuminate. Labellum deep red, on a narrow reddish claw, concave beneath, studded with minute calli above, the edges ciliate towards the tip. Callus large, dark-red, cleft by a linear, greenish depression. Column-wings bifid or entire, narrow acuminate.

Distribution: Endemic, *3a,* Birkdale, 4, 1922, *H. B. Matthews;* Titirangi, 4, 1945 and 1946, *E. D. Hatch; 3c,* Paeroa Range, *K. W. Allison; 4,* Lake Tutira, *H. Guthrie Smith;* Te Hawara, *W. Colenso;* 5, Lake Taupo (Type Locality), *W. Colenso;* Waimarino Plains, *E. P. Turner;* Rotorua, 1, 1922, *K. W. Allison;* 1, 1923, *H. B. Matthews;* "widely spread, if not common, from Rotorua to Atiamuri and Taupo," *K. W. Allison; 7,* Kaitoke, *B. C. Aston;* Port Nicholson, *W. Colenso; 8,* Port Underwood, *J. H. Macmahon;* Portage, Te Mahia, 1943, *J. Healy;* Kenepuru Sound, *J. H. Macmahon,* 1943, *J. Healy;* 10, Westport, *W. Townson, J. E. Holloway.*

Grass, roadsides, and scrub, never abundant. Flowers January to June. Sea level to 1,000ft.

The writer has not seen descriptions of Healy's South Island specimens, but since the glandular tips to the lateral sepals, described by Cheeseman as characteristic of the Westport material, also occur occasionally in the North Island form, it seems probable that only one species of this group of *Genoplesium* is to be found in New Zealand. Matthews left excellent descriptions of his Birkdale specimens. (*Mss.*

Pr. rubriflorum), and Allison has provided similar data for his specimens collected from Rotorua and Taupo. Both agree in detail with the writer's Titirangi plants.*

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* Since this paper went to press the writer has rediscovered Matthews' Birkdale locality. Mr. Healy has also kindly loaned his Te Mahia specimens, which prove beyond doubt that the South Island plants belong to *Pr. nudum.*